

ZOOLOGICA

SCIENTIFIC CONTRIBUTIONS OF THE
NEW YORK ZOOLOGICAL SOCIETY



VOLUME II, NUMBER 6.

MAMMALS OF AUSTRALIA IN THE ZOOLOGICAL PARK

Illustrated with photographs by the Author and Elwin R. Sanborn

By W. H. D. LE SOUEF,

Director Zoological Gardens, Melbourne.

Author "The Animals of Australia," "Wild Life in Australia."

PUBLISHED BY THE SOCIETY
THE ZOOLOGICAL PARK, NEW YORK

JANUARY, 1919

P R E F A C E

DIRECTOR LE SOUEF AND THE AUSTRALIAN FAUNA.

In length and breadth of departure from the recognized standards of mammalian anatomy and physiology, the mammals of Australia are, per capita, the most odd and remarkable of any continental group. With the exception of the dingo, a few rodents and bats, all those species that do not lay eggs are marsupials, and carry in the abdominal pouch the astoundingly minute newly-born young until it grows to a size fit to take a small place in the outer world. A newly-born kangaroo cannot possibly be appreciated by a stranger until it is seen.

The Australian marsupials display a remarkable line of radiating development that is quite inexplicable to zoologists. This relates to the production of forms within an order, that strikingly parallel in external appearance the characteristic forms of members of various orders of mammals. It would appear as if the scheme of evolution among the Australasian marsupials tended to produce an aggregation of pouched mammals that in form and habits would cover the strange absence of other orders. The Tasmanian "wolf" may be cited as an example and the ant-eating echidna, with its porcupine-like quills, as another. There are carnivorous, fox-like phalangers, marsupial "mice," the wombat—in form and habits like a gigantic woodchuck, and the flying phalanger, which latter animal is precisely like a flying squirrel in form and actions. Yet more remarkable is a marsupial mole.

The New York Zoological Park always has been rather strong in Australian mammals. They are so universally interesting as to be irresistible. Our Australian collection is now very rich. As a contribution to public interest in these strange creatures from the continent wherein Nature has done everything differently, the distinguished Director of the Melbourne Zoological Gardens has been prevailed upon to write a series of short, popular sketches of the Australian species now or recently exhibited here, and illustrate many of them with photographs taken by him in Australia.

Mr. Le Souef is a man of charming personality and successful habit. He visited and lectured in America about eight years ago, and thereby greatly strengthened the bonds of interest between the zoologists of his country and ours. He is the author of books on the wild life of Australia that are at once deeply interesting and thoroughly reliable. The titles of those best

known are "Wild Life in Australia" (London, 1907), and "The Animals of Australia," by A. H. S. Lucas and W. H. Dudley Le Souef (London, 1909).

W. T. HORNADAY.

CONTENTS

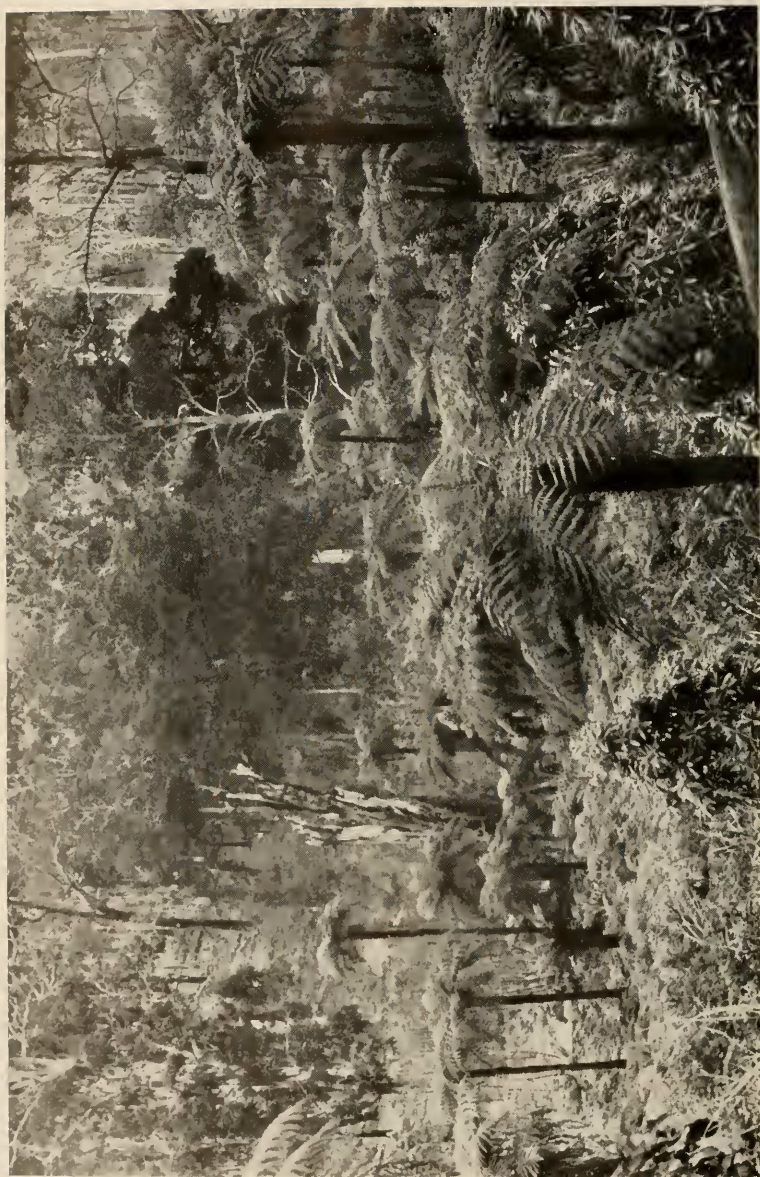
PREFACE	163
INTRODUCTION	167
MAMMALS OF AUSTRALIA	169
DINGO	169
WATER RAT	170
RATS	171
MICE	171
JERBOA RATS	173
GIANT RATS	174
MUSK RATS	174
KANGAROOS	175
TREE WALLABY	178
WALLABIES	180
KANGAROO RATS	185
PHALANGER	187
KOALA	190
FLYING-PHALANGER	191
CUSCUS	193
BANDICOOTS	193
WOMBATS	194
TASMANIAN WOLF	195
TASMANIAN DEVIL	195
SPOTTED DASYURE	196
MARSUPIAL MICE	197
ECHIDNA	198
PLATYPUS	200
MARSUPIAL MOLE	201

FIGURES

Fig. 32—A typical forest in Victoria, Australia		<i>Frontispiece</i>
Fig. 33—Australia: (Map)		Facing 169
Fig. 34—Young Gray Kangaroo	}	
Fig. 35—Wallaro		
Fig. 36—Woodward Kangaroo		
Fig. 37—Black-Faced Kangaroo		
Fig. 38—Parry Kangaroo		
Fig. 39—Giant Red Kangaroo		
Fig. 40—Kangaroo Island, Kangaroos		
Fig. 41—Bennett Tree Kangaroo		
Fig. 42—Bennett Tree Kangaroo		
Fig. 43—Captive Tree Kangaroo		
Fig. 44—Rufous-Necked Wallaby		
Fig. 45—Brush-Tailed Phascogale		
Fig. 46—Tree Wallaby		
Fig. 47—Albino Red Kangaroo		
Fig. 48—Albino Red-Bellied Wallaby		
Fig. 49—Ring-Tailed Wallaby		
Fig. 50—Brush-Tailed Wallabies		
Fig. 51—Black Swamp-Wallaby		
Fig. 52—Male of the Swamp-Wallaby		
Fig. 53—Agile Wallaby		
Fig. 54—The Home of the Tree Wallaby		Facing 179
Fig. 55—Short-Tailed Wallaby		
Fig. 56—Rat Kangaroo	}	
Fig. 57—Australian Gray Phalanger		
Fig. 58—Koala or Native Bear		
Fig. 59—Koala in its Tree-top Haunts		
Fig. 60—Fat-Tailed Opossum Mouse		
Fig. 61—Flying-Phalanger		
Fig. 62—Rabbit-Eared Bandicoot		
Fig. 63—Wombat and Young		
Fig. 64—Tasmanian Wolf		
Fig. 65—A family of Tasmanian Devils		
Fig. 66—Under surface of the Echidna		Facing 198
Fig. 67—Echidna		Facing 198
Fig. 68—The Platypus, or Duck-Bill		Facing 201

Between pages
176 and 177

Between pages
192 and 193



Photograph by W. H. D. LeSouef

FIG. 32. A TYPICAL FOREST IN THE PROVINCE OF VICTORIA, AUSTRALIA

This home of the beautiful Tree Fern is also the favorite haunt of the now rare Lyre Bird, the Black-Tailed Wallaby, Yellow-Breasted and Rose-Breasted Robins, Giant Kingfisher and Giant Earthworm. "Fern gullies always are delightful places to visit on a hot day."

MAMMALS OF AUSTRALIA IN THE ZOOLOGICAL PARK

By W. H. D. LE SOUEF,

Director Zoological Gardens, Melbourne.

Author "The Animals of Australia," "Wild Life in Australia."

ILLUSTRATED WITH PHOTOGRAPHS BY THE AUTHOR AND
ELWIN R. SANBORN.

INTRODUCTION.

Australia is a large country, approximately 2,000 miles square, and is very sparsely populated, therefore, although good laws exist for the protection of native game, it is very difficult to see that they are enforced in the thinly populated districts. For example, Queensland has an area of 670,000 square miles, but its population is only about 190,000 whites, and approximately 9,000 aborigines. New South Wales is better, having an area of 309,460 square miles and a population of 1,847,214. Victoria has an area of only 87,884 square miles, but has a population of 1,397,977, so is considerably more dense than the other States. South Australia consists of 380,070 square miles and has 433,616 people, but Western Australia had the large area of 975,920 square miles and a population of only 308,806.

The Northern Territory, also is a large district, consisting of 523,620 square miles, and inhabited by only 4,767 people, excluding natives. The island of Tasmania has 26,215 square miles, with a population of 199,925.

In glancing over these figures one can easily realize the difficulty in fully enforcing game laws. The only way that native animals surely can be preserved for those that come after us is, to form Reserves in various types of country. This is being done in many of the States, but only to a limited degree at present, because the subject is a difficult one. Introduced foxes and domestic cats that have gone wild, to say nothing of rabbits, cannot well be kept out of these Reserves. The foxes and cats prey on the protected game, and the rabbits destroy the native grass and shrubs that it is sought to preserve. Of course, these animals are not all over Australia yet, but they certainly will

be in course of time, despite fences, and we cannot possibly estimate the havoc they will play with the ground game and water fowl. It is quite possible that some species will become extinct before we realize it.

Then again, parts of Australia are subject to severe droughts, and thousands of small animals, as well as birds and kangaroos, perish, and emus cannot migrate as they used to do, on account of fences and settlements. The sheep and cattle help to denude the country and drain the waterholes. Therefore, in some districts where certain forms of life formerly were in evidence, none are seen now. Take as an example about fifty miles inland from Rockhampton in Queensland: there the beautiful parakeet, (*Psephotus pulcherrimus*) was fairly plentiful, but since the drought in 1896 not a bird has been seen in the whole district. The pig-footed bandicoot was comparatively common in the southern districts of Australia, but now one is rarely, if ever, found.

Gilbert's rat-kangaroo, (*Potorous gilberti*), of southwest Australia, apparently is extinct. The so-called native cat, (*Dasyurus*) was exceedingly plentiful in Victoria, but now they are just as scarce as they once were plentiful. It is difficult to say why these various animals have almost disappeared. Of course the settlements and what they bring with them might account for a good deal, but certainly not for all. We really know little as to the unaccountable disappearance of small mammals in districts where they were numerous, and when we wake up to the fact that they have gone, it is usually too late to take measures of protection. Probably the same thing occurs in America, and elsewhere.

The introduction of foxes into Australia by private persons is bound to cause the destruction, and possibly, extinction of certain ground game. Inasmuch as much of the country has been cleared of scrub, the game does not have the same cover that it had formerly. The animals that live in burrows probably will hold their own longer than those that make their nests on the surface. Tasmania being of comparatively small area, is sure to lose the marsupial wolf or thylacine before long, as the dense bush is cleared and the country becomes more thickly



A. D. HANBY, Comp

FIG. 33. AUSTRALIA: GREAT BRITAIN'S SOUTHEASTERN EMPIRE

The development of Australia outruns the imagination. How many Americans know that a great transcontinental railway now links Brisbane, Sidney and Victoria with far-distant Perth and Western Australia? Notwithstanding her tremendous outpouring of men, munitions, ships and money for the war, Australia is vigorously maintaining her chain of zoological gardens, and a remarkable series of sanctuaries for the preservation of wild life.

settled. Even now it is scarce, and the settlers snare and destroy it whenever they get the opportunity. The Government has lately established a large Reserve for it near Hobart.

In Queensland there are ninety-two Honorary Rangers, and that State is trying to protect its animal life, but having so much sparsely populated country it is difficult. In the near future, they probably will convert more Crown Land into Reserves. So far only four have been made for animals and fifty-two for birds. It is now under consideration to take up the subject of the exportation of the skins of Australian native wild animals, and to place this important matter on a proper basis. It probably will be under the control of the Commonwealth Government, and further efforts then will be made to preserve our fast disappearing fauna. In every country there are what are popularly called "game hogs," heedless men as well as thoughtless boys, who seek to destroy the fauna of the country for their own individual benefit, and with no thought for posterity, or whether they are exterminating the fauna or not. Simply for what they call "sport," they carelessly destroy all they can, making little use of what they do kill. Persons of this class always are with us, more or less.

THE MAMMALS OF AUSTRALIA.

DINGO.

The Dingo, (*Canis dingo*) is found over the whole of Australia, but curiously enough not in Tasmania or the adjacent islands to the north. It probably is one of the most ancient of wild dogs, and its anatomy shows it to be an intermediate form between the wild dogs of South America and those of the old world. It is a true wild dog.

These animals are usually met with singly or in pairs and only occasionally in small packs, and then they probably would be parents and young. They never attack a human being. They usually hunt at night, but their scent is so keen that they frequently capture ground birds by stalking them and then catching them as they rise on the wing from the ground. They are the size of a sheep dog, and the ears are short and erect. The

fur on the under part of the body is gray, the longer hairs, which give the body coloring, are reddish-yellow to much darker shades and in some specimens the saddle is almost black. The Western Australian dogs are, as a rule, darker than those in Victoria. The feet and tip of the tail are usually white.

Albinos sometimes occur and as these often breed true, a white race could easily be established. The females always seem to predominate. They are fleet and strong and can overturn a sheep or calf with ease, should the mother of the latter be absent. However tame they may appear in captivity, they cannot resist the temptation of killing a fowl, should they get an opportunity. They bite with a snap like a wolf, and animals bitten by them seldom recover.

In the open country these dogs can be ridden down by a good horse and despatched with a stirrup iron or waddy, or even caught if necessary. They are readily poisoned with strychnine. When the aboriginals of Australia found Dingo pups they used to rear them with care, tame them partially, share their bed and food with them, and the dogs then would only follow their owners. They were never struck by the natives, but these partially tamed dingoes often joined their wild comrades in the bush and did not return. The natives used them for hunting, but they apparently only followed their master. These animals breed freely with European dogs and consequently it is now difficult to obtain a pure bred Dingo. They never bark, but can howl dismally.

The fossil bones of these animals have been found in several parts of Australia in a formation that is considered to be Pliocene, so that apparently they were in existence in Australia long before human beings.

WATER RAT.

The Water Rat, (*Hydromys chrysogaster*). This is a large, handsome rodent fully twenty inches long from nose to tip of the tail. They are dark buff above, a rich orange-brown below, and the tail is white toward the end. These animals are still fairly plentiful, but being nocturnal are seen rarely. They are purely aquatic and frequent inlets of the sea as well as rivers

and lakes, where they feed on the shell-fish, crustaceans and vegetation. They are found in all parts of Australia and Tasmania. The western species is slightly darker than those found in the eastern side of Australia and the amount of white on the tail also varies. A small rat, dark grey on the back, called Thomas' Rat, (*Xeromys myoides*) is found in Queensland. Its body is only four and one-half inches long and its tail three and one-half inches.

RATS.

Due to their remarkable fecundity, rats are very plentiful in Australia, as in other parts of the world, both in species and individuals. Both rats and mice occasionally increase during an unusually good season, when food and cover are plentiful, to almost incredible numbers. During the year of 1917, there was an abundance of rain in southern Australia throughout the summer which produced a great growth of grass and other vegetation. Therefore, as food was plentiful and the vegetation so dense, the rodents were securely hidden from their enemies. They increased so enormously that food became scarce, especially where the grass began to get dry, and they had to migrate in their many millions. They were then preyed on by snakes, carnivorous animals and birds, but despite this, the destruction caused by these little rodents was very great. At the wheat stacks alone at eight railway stations in Victoria, about thirteen tons of mice, representing approximately 892,000 animals, were caught in three days. The same migrations occur in other countries, especially among the leming in Norway.

MICE.

The members of the genus *Mus* are represented in Australia by twenty-eight species so far known. But this number is certain to be increased later on. As our knowledge of these animals is very incomplete at present, an authentic list cannot well be given. Of our twenty-eight species, only five can be termed mice, although it is difficult to draw a dividing line between the two species. They are met with practically every-

where, increase rapidly, and all burrow more or less. One of the commonest species is the Dusky-Footed Rat, (*Mus fuscipes*), is found in South Australia, the islands of Bass Straits and Tasmania, usually near water or on swampy land. Its body length is about six inches and the tail is about four inches. The fur is conspicuously long.

A closely allied form, (*M. assimilis*) or the Allied Rat having very soft fur, which is light brown above, is found from N. E. Queensland to S. W. Australia, usually in thickly timbered country. They live largely on fruits and seeds. On the Darling Downs in Queensland, the *M. sordidus* is found. It is blackish-brown above and measures about six and one-half inches, with a tail five inches long. Generally in open country, and at the extreme N. E. of Australia, the White-Footed Rat, (*M. terraereginae*) is plentiful. Its back is dark brown, with longer black hair and tail with light colored rings. It measures eight and one-quarter inches and the tail seven and one-quarter inches.*

M. gouldi is reddish-yellow in color, with numerous long black hairs above. It measures four and one-half inches and tail three and one-half inches. It is found in south, eastern and central Australia. And *M. greyi* inhabits central and north-eastern Australia and is reddish brown in color with longer dark hairs. It is six inches long and its tail four and three-quarter inches. One small species in Western Australia, *M. nanus*, is only four inches long and its tail three and one-half inches. It is brown in color and has a white patch under the tail. The Pigmy Mouse, (*M. delicatulus*) from Northern Australia is only two and one-half inches and the tail about the same length. It is yellowish-brown in color and the upper parts and the sides of the body are yellow.

The Greyish-White Mouse, (*M. albocinereus*) is found near the seashore in S. W. Australia. Its body is covered with long, soft, light grey hair and the tail and feet are white. The Brown Rat, (*M. decumanus*) and Domestic Mouse, (*M. musculus*) have spread over most of Australia and have become numerous in many districts in the country, as well as in the towns. The

*In a short article like this full descriptions of the various species cannot well be given. (Author.)

former have from two to three litters a year each containing from nine to fourteen young. The European Black Rat is also in evidence, not only in the cities, but chiefly in the country, as they have the habit of building their nests in hollows in trees and are therefore largely arboreal.

JERBOA RATS.

The interesting family of Jerboa Rats of the genus *Conilurus* (*Hapalotis*) is confined to Australia where they are also plentiful in many districts, their long ears and tails making them conspicuous. The fossil specimens that have been found are of great interest as illustrating in the rodents a mode of progression similar to that of the kangaroos. These little animals advance by leaps and bounds like the Jerboas of Africa and Asia and the jumping mice of North America. Fourteen species are known so far, mostly confined to the interior, although some varieties live in the coastal districts of north Queensland.

They have from three to four young, but have no pouch; the young being attached firmly to the nipple and also grasping their parent with their claws. They are strictly nocturnal, resting during the day in nests of dried leaves and grass in hollow fallen branches. The largest varieties, *C. boweri* and *C. hirsutus* are nearly two feet in length and are found in north Queensland.

The White-Footed, (*C. albipes*) is found in the southeastern districts. This animal is greyish-brown, black around the eyes, and has a body length of ten inches and a tail nine and one-half inches. The nest-building Jerboa Rat, (*C. canditor*) from the interior of eastern Australia is only six inches long, and its tail five inches. They combine together and make large nests of grass, sticks and bits of bark sometimes over three and one-half feet high, usually around a small bush, the branches of which help to strengthen the structure. One family or more may occupy a nest and each family has its own compartment, which is connected with the others by passages that put one very much in mind of a beaver's lodge. This animal is greyish-brown and is darker on the center of the back and head.

The Long-Tailed Jerboa, (*C. longicaudatus*) inhabits Western Australia and is seven inches long, with a tail nine inches. It is pale buff on the back and the end of the tail is white. It is usually found in scrub-covered country. The Fawn-Colored Jerboa, (*C. cervinus*) is four and one-half inches long and the tail five and one-half inches long. It is found in the central districts of South Australia. The large ears of this delicate looking little animal are much lighter in color than its back and are very conspicuous. It is all white below. A rat named the Dusky Broad-Toothed (*Mastacomys fuscus*) is found in Tasmania. It is only five and one-half inches long and is dark greyish-brown in color.

GIANT RATS.

The largest rat in Australia, the Giant Rat, (*Uromys macropus*) is found from northeastern Australia to the Arnhem Islands. It is fourteen inches long with a tail about the same length, and rarely is seen in captivity. It is reddish-grey above and white below and is probably destructive to birds' eggs and young during the nesting season. The Buff-Footed Rat, (*U. cervinipes*) found in Western Australia only, is but six inches long with a tail a little over five inches. It is light brown above, with buff-colored feet. The scales on the tails of these animals do not overlap but are set edge to edge.

MUSK RATS.

We now come to the animals that are strictly marsupial, and in Australia they are naturally numerous. The Australian Musk Rat, (*Hypsiprymnodon moschatus*) usually found in the scrub-covered country of the coastal districts of Queensland, is a graceful little animal, with soft and orange-grey colored fur, diurnal in habit and living on insects, snails, fruit and seeds. It has two young at a time in its pouch, and its length is about ten inches and tail six and one-half inches. It is rarely seen and the perfume of musk easily identifies it.

KANGAROOS.

All kangaroos have more or less the same habits and are usually found in small companies in country where they are not disturbed. They are protected for the whole year in Victoria and soon increase if undisturbed. Partial protection is given to them in New South Wales, but not in Queensland, except in certain districts. The number of skins annually sent to other countries from Australia, especially from Queensland, runs into many thousands. Of this number, the United States receives a large share; sometimes over 80,000 in one year.

Many men make their living entirely by shooting kangaroos with a rifle; one man I know having shot over 400 last year (1917). This means that in the course of comparatively a few years, these interesting animals will become very scarce, as the skins of all species, including wallaby, are used for leather. The introduction of the fox into Australia will not help matters as they are sure to kill some of the young ones. These animals fortunately live and breed freely in confinement, having but one young at birth, although twins have been known to occur occasionally.

They are hunted on horseback with the aid of a large dog of the grey-hound type, known as a kangaroo dog, and if the country should be sufficiently open, they usually are caught and killed. When hard pressed, they often will take refuge in a river or in swamps standing waist deep in the water and awaiting their enemies. Should a dog swim out to them, they will hold it under water with their fore arms and eventually drown the venturesome animal. When attacked on land, the old males that are not as speedy as the females, often stand with their back to a tree ready to fight with the dogs; and they are usually quite a match for any single dog. Young kangaroos are often caught and reared by hand, when their mother has been shot or otherwise killed. Their backs are easily damaged if roughly handled. When leaning forward to feed on short grass, they often rest on the upper part of their paws, as well as on the under part in the ordinary way. When in this position, the young that may be in the pouch, and old enough, can nibble on the grass at the same time.

The Grey Kangaroo, (*Macropus giganteus*) is found across the entire southern part of Australia as well as in Tasmania. The species from that island (*M. fuliginosus*) is now very scarce. It has long, dark fur and the under parts are white. The female is much lighter in color than the male. Those on the western side of the mainland usually are darker, but generally melanism is more pronounced among the animals in the western portion of Australia than in the eastern. These animals are only a little inferior in size to the red kangaroo, and the fur is longer and coarser. The males are a dark grey and the females and young much lighter. They are found in open forest country and frequently are called locally the Forester Kangaroo. The variety from Tasmania and Kangaroo Island (*M. fuliginosus*) is now very scarce. It has long, dark fur, the under parts being white. The female is paler than the male.

The Wallaroo or Euro Kangaroo, (*M. robustus*) have long and coarse fur; the color of the male being dark reddish-grey and that of the females more bluish-grey. Farther north in Queensland, the color is often dark greyish-brown in the males. The exact tint varies considerably. This variety is found in the central districts of Australia, as well as towards the coast. They live only on the rocky ranges and are thickset and strong and adepts at bounding over the often rough country where they are found, and where frequently it is difficult for a dog to follow them.

Several sub-species of this animal, (*M. woodwardi*) from northwest Australia, have been described. The color of the short, close hair of the male is bright red and that of the female, fawn. The head and body measures four feet and the tail three feet. The fur of *M. alligatoris* from north Australia is also short and the color more or less rufous, with the neck, arms and fore-back, fawn. Another sub-species from southwestern Australia, *M. cervinus*, is lighter in color, and lastly *M. isabellinus* from Barrow Island off west Australia, has a dark rufous back with the front of the neck white. In the southern districts of Australia, in the drier and frequently sandy country where the mallee eucalyptus grows, is found a darker and more slender variety of kangaroo, the Black-Faced, (*M. melanops*). However,



Photograph by W. H. D. LeSouef

FIG. 34. YOUNG GRAY KANGAROO, *M. gigantus*
Immature specimen just born and placed in the pouch.
Beside it is the the nipple to which it would have
been fastened about life size.



FIG. 35. WALLAROO OR EURO KANGAROO
New York Zoological Park.



Photograph by E. R. Sanborn

FIG. 36. WOODWARD KANGAROO
New York Zoological Park.



Photograph by E. R. Sasthorn

FIG. 37. BLACK-FACED KANGAROO
New York Zoological Park

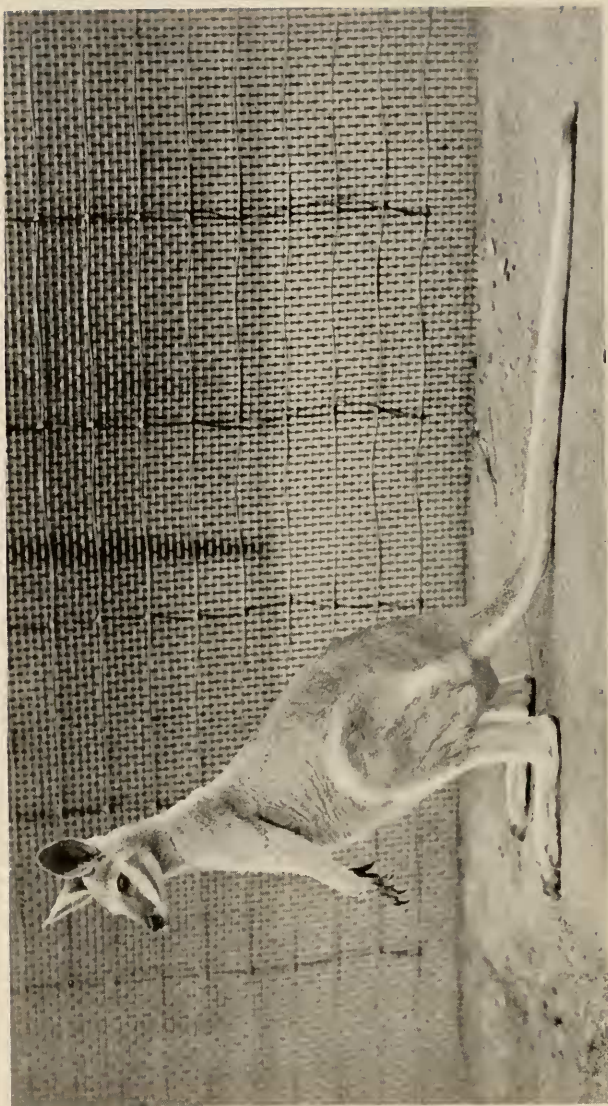


FIG. 38. PARRY KANGAROO
New York Zoological Park.



FIG. 39. GIANT RED KANGAROO.
New York Zoological Park.



Photograph by E. R. Somborn

FIG. 40. KANGAROO ISLAND KANGAROOS
New York Zoological Park.



Photograph by E. R. Sanborn

FIG. 41. BENNETT TREE KANGAROO

The tail is not prehensile, but is used in balancing. The forefeet are adept in grasping. These animals sometimes leap to the ground from a height of fifty feet.

New York Zoological Park.



FIG. 42. BENNETT TREE KANGAROO
They both climb and nimbly jump from branch to branch.

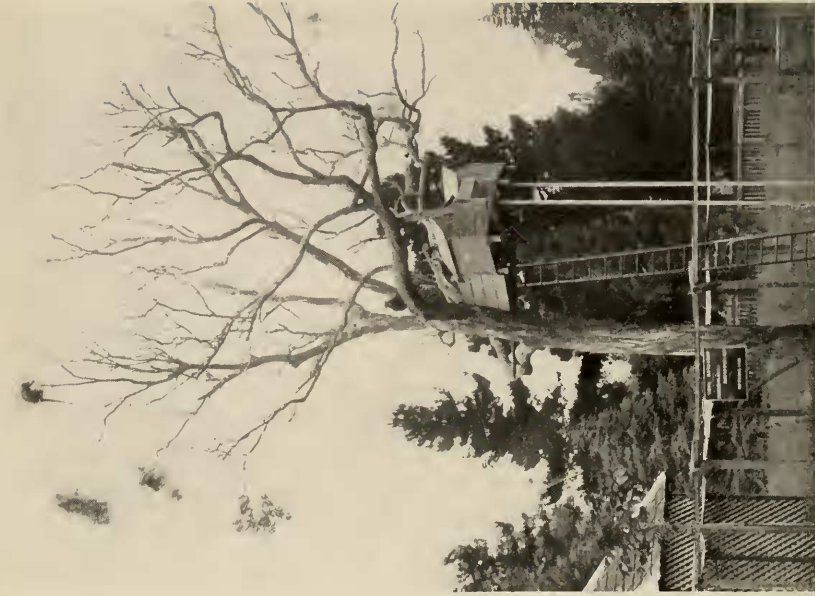
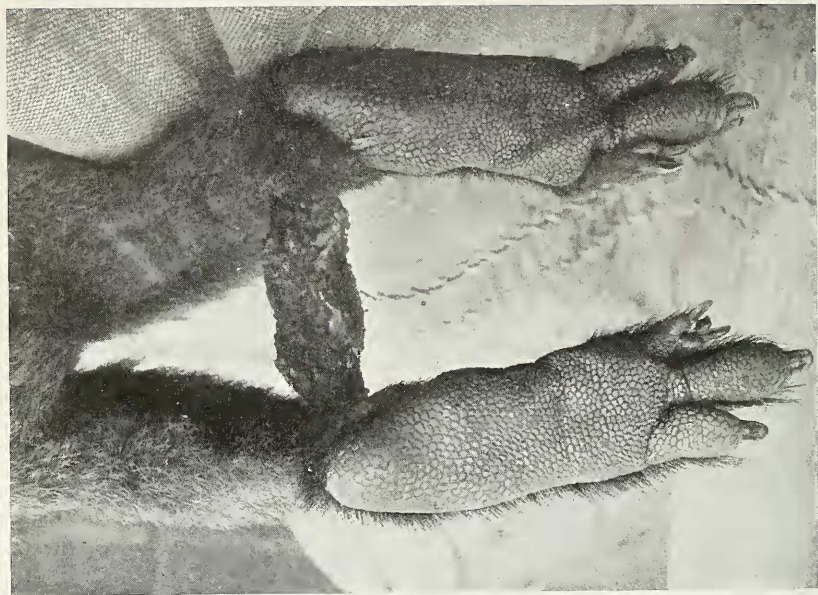


FIG. 43. CAPTIVE TREE KANGAROOS
In the Zoological Gardens at Melbourne, Australia.



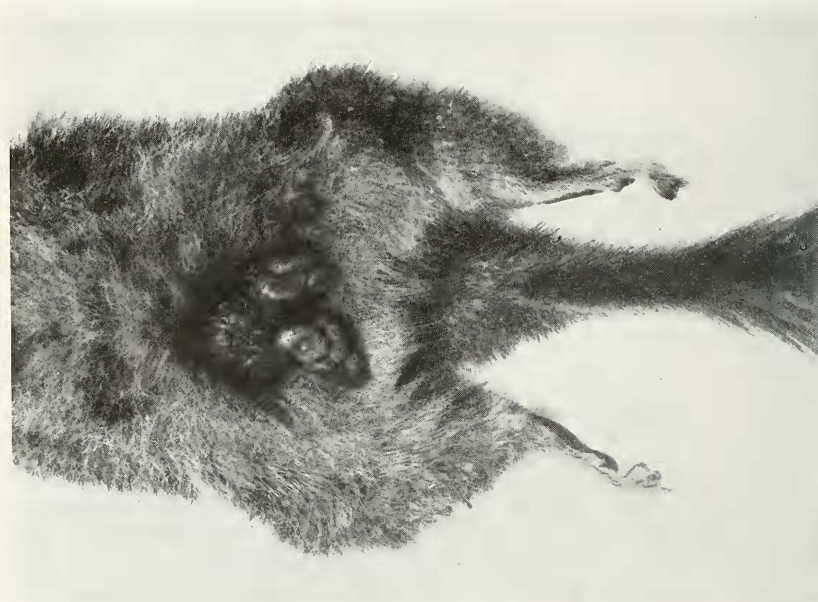
FIG. 44. RUFOUS-NECKED WALLABY
New York Zoological Park.



Photograph by W. H. D. LeSueur

FIG. 46. BENNETT TREE KANGAROO, *D. bennettianus*

Showing pads on the hind feet.



Photograph by W. H. D. LeSueur

FIG. 45. BRUSH-TAILED PHASCOGALE

Young attached to nipple.



Photograph by W. H. D. LeSouef

FIG. 47. ALBINO RED KANGAROOS
Melbourne Zoological Gardens



Photograph by W. H. D. LeSouef

FIG. 48. ALBINO RED-BELLIED WALLABY
Tasmania



FIG. 49. RING-TAILED WALLABY
New York Zoological Park.



FIG. 50. BUSH-TAILED WALLABIES
New York Zoological Park.



Photograph by E. R. Striborn

FIG. 51. BLACK SWAMP-WALLABY

Young kangaroos seek refuge in the mother's pouch until one-third grown. This young specimen was fully weaned, but rushed for the mother upon the slightest disturbance.
New York Zoological Park.



Photograph by E. E. Snibson

FIG. 52. MALE OF THE SWAMP-WALLABY

The dexterous manipulation of the forefeet is clearly shown.
New York Zoological Park.

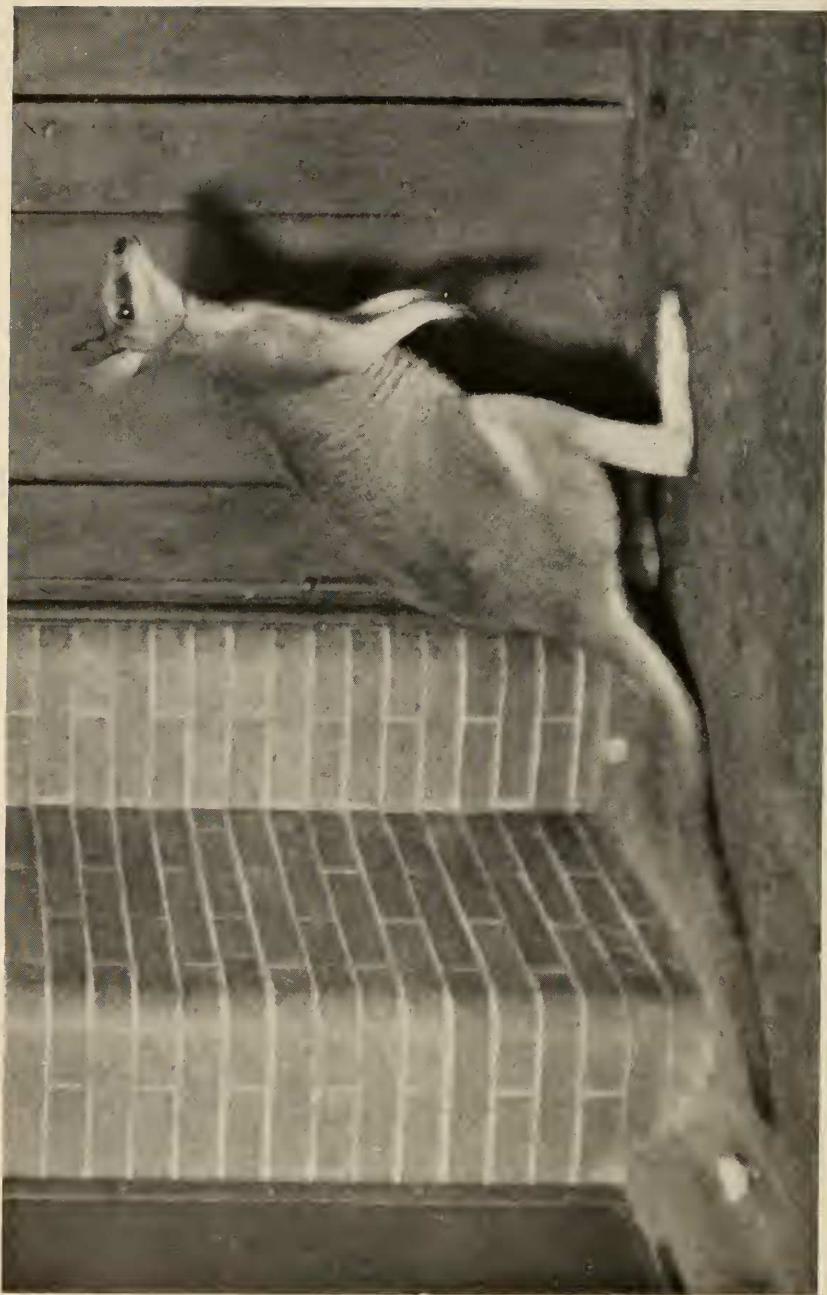


FIG. 53. AGILE WALLABY
New York Zoological Park.

as this country is being cleared rapidly for wheat-growing, this animal will become scarce, as it is destroyed by the farmers.

Kangaroos are diligently sought for their skins, and although they are well protected in Victoria, and to a certain extent in other parts of Australia, their numbers are diminishing. A small, slender species, Parry's Kangaroo, (*M. parryii*) is found in the hilly coastal districts of Queensland and northern parts of New South Wales. The short, soft and light bluish-grey fur marked with a white line on each side of its face as well as on the neck, and the long, thin tail, have suggested its local names, the Pretty-Face or Whip-Tail Kangaroo. It usually frequents scrubby country and often may be seen in the Darling Downs district from railway carriages when one is travelling from Brisbane to Sydney, or vice-versa. It is three feet in height and its tail is two and one-half feet in length. The Red Kangaroo, (*Macropus rufus*) is probably the largest of the kangaroos. The short, woolly fur is red in color in the male and bluish grey in the female. When standing upright, practically on its hind toes, and resting the weight of its body on the end portion of the tail, it measures about six and one-half feet; otherwise four to five and a half feet.

Old males get very pugnacious and frequently fight one another. They do so by scratching, if possible, with their fore paws, and also by leaning back and resting the weight of their body on the extreme end of their tail, only about six inches, and striking forward with the hind feet. The claws are sharp and although they do not often do much damage to each other, they can easily rip up an unwary dog should one tackle them. These animals live on the plain country of New South Wales and southern Queensland, generally remaining during the heat of the day under the shade of the trees that fringe the plains. They can easily travel at the rate of twenty miles an hour when pursued, and exceed that speed when pressed. They cover about twelve feet at a jump and can clear a fence eight to ten feet high. Occasionally they are pursued on the plains with motor cars, although I hardly think that is a fair way to get them, as they have no chance, unless they get into a belt of timbered or rough country. However, the sport is not destined to be very popular

as motoring over the plains at over twenty miles an hour is usually a very bumpy experience. A female kangaroo when hard pressed in flight if she should be carrying a heavy young one, or *joey* in her pouch, will take the young one out and conceal it under a bush, coming back when all danger is over, should she have a chance.

The only safe way to hold a kangaroo is by the tail, and it takes a strong man to hold one. The young are born in the ordinary way, but in a very immature state. They are about an inch long, the fore feet are twice the size of the hind feet and the tail very small. It is placed on the nipple in the marsupium by the mother and the pressure of the milk forms a small bulb at the end of the nipple at the back of the mouth. This swelling being larger than the entrance to the mouth of the young one, holds it on. If the young kangaroo is pulled off at an early stage it cannot be replaced.

The Antilopine Kangaroo, (*M. antilopinus*) is found in the Coburg Peninsula in north Australia, and very little is known of this animal. It is of a heavy build with short fur, rufous in color with underparts white. The female is smaller and of a fawn color. The head and body are four and one-half feet and the tail two feet long.

THE TREE WALLABY.

These interesting animals are found in the mountain ranges near the coast of northern Queensland as well as in New Guinea. Two varieties inhabit Australia, namely Lumholtz's, (*Dendrolagus lumholtzi*) and Bennett's, (*D. bennettianus*). The former which has long yellowish-brown fur with a black chin and white chest is found in the more southern districts near Cardwell, and the latter which has long dark brown fur, further north near Cooktown. Like most of the other grazing Australian animals, they rest during the day and feed chiefly at night. They live almost exclusively in trees or on the tops of granite boulders that are covered with vegetation. I once saw one of these animals that I disturbed when in the latter situation, jump to a rock

